

**THREE-PHASE
TRANSFORMERLESS
BATTERY INVERTER
WITH AN EXTRA
THERMAL STABILITY
AND A GREATER
POWER DENSITY****Up to 3.93 MVA at 1,500 V**

The INGECON® SUN STORAGE 3Power HV C Series is a three-phase bidirectional battery inverter that can be used in grid-connected and stand-alone systems. This one-of-a-kind battery inverter achieves a market-leading power density of 499 kW/m³, as it provides up to 3,928 kVA in just one power stack.

Latest generation electronics

The INGECON® SUN STORAGE 3Power HV C Series battery inverter features an innovative control unit that performs a more efficient and sophisticated inverter control, as it uses a last-generation digital signal processor.

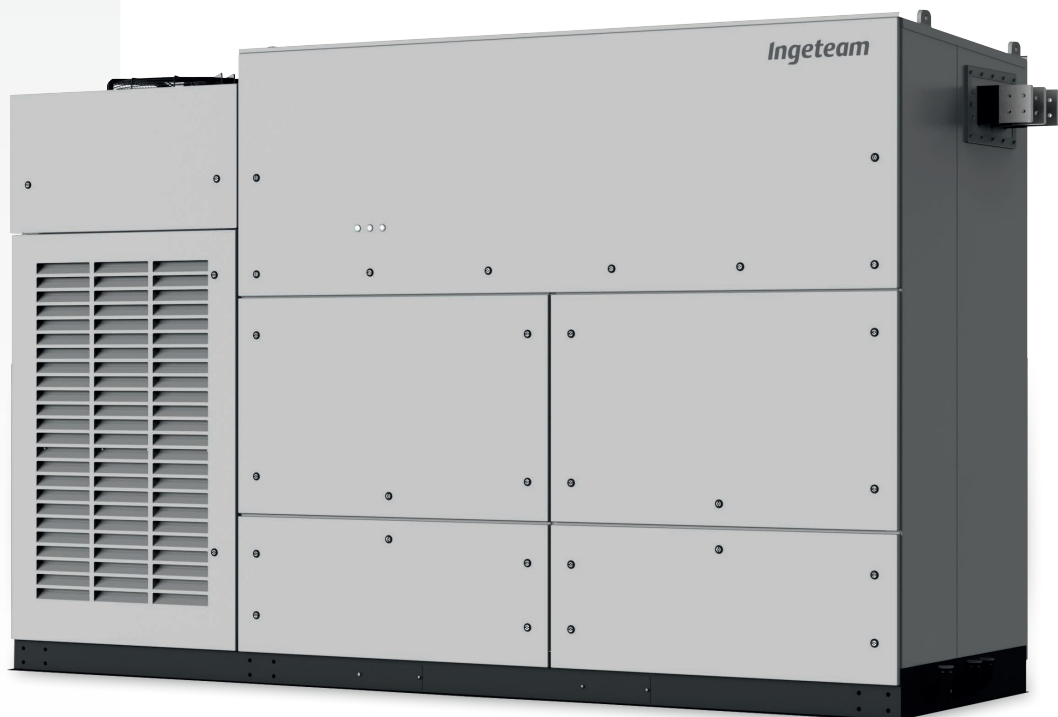
Liquid Cooling System (LCS)

Ingeteam has already supplied +54 GW of liquid-cooled wind power converters worldwide. It offers a greater thermal stability and a more optimized component usage. The LCS has been designed to refrigerate the IGBTs, the power phases and the IP65 compartment. It features less moving components, so it consumes a lower amount of power and it requires less maintenance works.

The LCS is a closed circuit supplied totally filled and purged, equipped with fast connectors with an anti-dripping system, so it offers zero risk of particle entrance. It has been designed to avoid siphons in order to easily purge it if necessary. The coolant used is a biodegradable glycol water mixture. There is no need of emptying the LCS in order to replace the phases, nor the sensors.

IP65 protection

A secondary liquid cooling system is used to refrigerate the air inside the IP65-protected compartment. A water-air heat exchanger is used for that. This compartment contains the power and control electronics, the DC fuses, the DC and AC protections, the busbars and the power phases.



Power converter stands both, grid-following and grid forming operating modes:

Real power related functionalities

- Renewable resources integration:
 - Ramp limits.
 - Power smoothing / firming / curtailment.
 - Time shifting.
 - Micro grids.
- Grid support / Ancillary services:
 - Frequency regulation.
 - Synthetic inertia.
 - Black start.
 - Frequency control / protection.
 - Virtual “Synchronous Machine”.

- Investment deferral:
 - Peak shaving.
 - Load shifting / Load following.
 - Real power response improvement of conventional power plants.
- Power efficiency:
 - Time shifting.
 - Price arbitrage.
 - Real power response improvement of conventional power plants.
 - Peak shaving.

- Safety and quality:
 - “Un-interruptible” Power.
 - Grid code compliance.
 - Transmission congestion relief / Power quality - reliability.

Reactive power related functionalities

- Voltage control (Q/V).
- Voltage control / protection.
- Fixed power factor (QPF).
- Fixed reactive power output (Qref).
- Limitation of response of Reactive Power.

Standard 5 year warranty, extendable for up to 25 years.

PROTECTIONS

- Short-circuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- Insulation failure DC.
- Up to 24 pairs of fuse-holders.
- Lightning induced DC and AC surge arresters, type II.
- Motorized DC switch.
- Motorized AC circuit breaker.
- Hardware protection via firmware.
- Additional protection for the power stack, liquid cooled, IP65 rated and air cooled by a closed loop.

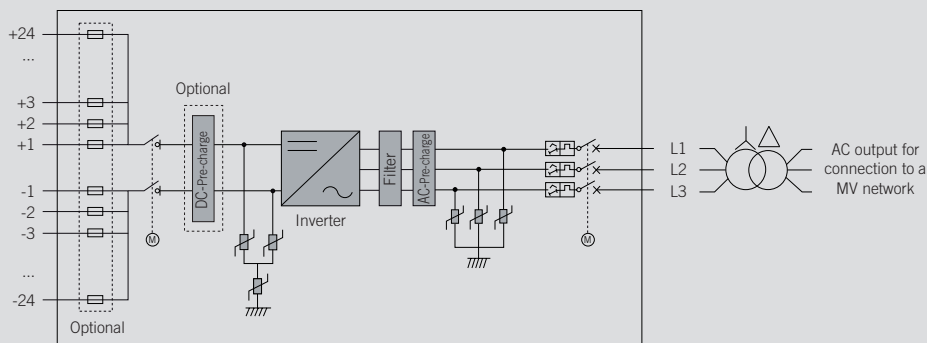
OPTIONAL ACCESSORIES

- Heating kit, for operating at an ambient temperature of down to -30 °C.
- DC surge arresters type I+II.
- AC surge arresters type I+II.
- DC fuses.
- Monitoring of the DC currents.
- Grounding kit.

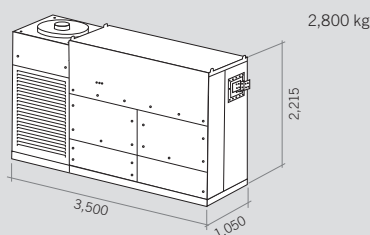
LIQUID COOLING SYSTEM

- LCS to refrigerate the IGBTs.
- More optimized component usage: greater thermal stability.
- Less moving components: lower power consumption and less maintenance works.
- No risk of particle entrance.
- Anti-corrosion protection with stainless steel components
- LCS is used in many industries. Thus, it is very reliable, as its components are subject to many validation tests.
- Fast connectors with anti-dripping system
- Biodegradable glycol water mixture.
- No need of emptying the LCS in order to replace the phases, nor the sensors.

INGECON® SUN STORAGE 3930TL HV



Size and weight (mm and kg)



INGECON® SUN STORAGE 3930TL HV							
	C600	C650	C690	C730	C750	C800	C840
Input (DC)							
Battery voltage range for off-grid mode	854 - 1,500 V	924 - 1,500 V	979 - 1,500 V	1,035 - 1,500 V	1,063 - 1,500 V	1,132 - 1,500 V	1,188 - 1,500 V
Battery voltage for grid-tied mode ⁽¹⁾	938 - 1,500 V	1,014 - 1,500 V	1,075 - 1,500 V	1,136 - 1,500 V	1,167 - 1,500 V	1,244 - 1,500 V	1,305 - 1,500 V
Maximum voltage	1,500 V						
Maximum current	3,357 A						
N° inputs with fuse-holders	Up to 24						
Fuse dimensions	Up to 630 A / 1,500 V / aR / 100 kA (L/R=5ms) (optional)						
Type of connection	Connection to copper bars						
Power blocks	1						
Input protections							
Overvoltage protections	Type II surge arresters (type I+II optional)						
DC switch	Motorized DC load break disconnect						
Other protections	Up to 24 pairs of DC fuses (optional) / Reverse polarity / Insulation failure monitoring / Anti-islanding protection						
Output (AC)							
Discharge power @1,500 V _{dc} (30 °C / 50 °C)	2,806 kVA / 2,266 kVA	3,040 kVA / 2,454 kVA	3,227 kVA / 2,605 kVA	3,414 kVA / 2,756 kVA	3,507 kVA / 2,831 kVA	3,741 kVA / 3,020 kVA	3,928 kVA / 3,171 kVA
Discharge current @1,500 V _{dc} (30 °C / 50 °C)	2,700 A / 2,180 A						
Charge power @1,500 V _{dc} (30°C / 50°C)	2,665 kVA / 2,152 kVA	2,887 kVA / 2,332 kVA	3,064 kVA / 2,475 kVA	3,242 kVA / 2,619 kVA	3,331 kVA / 2,690 kVA	3,553 kVA / 2,870 kVA	3,730 kVA / 3,013 kVA
Charge current @1,500 V _{dc} (30°C / 50°C)	2,564 A / 2,071 A						
Rated voltage ⁽²⁾	600 V IT System	650 V IT System	690 V IT System	730 V IT System	750 V IT System	800 V IT System	840 V IT System
Frequency	50 / 60 Hz						
Power Factor ⁽³⁾	1						
Power Factor adjustable	Yes, 0 - 1 (leading / lagging)						
THD (Total Harmonic Distortion) ⁽⁴⁾	<3%						
Output protections							
Overvoltage protections	Type II surge arresters (type I+II optional)						
AC breaker	Motorized AC circuit breaker						
Anti-islanding protection	Yes, with automatic disconnection						
Other protections	AC short-circuits and overloads						
Features							
Operating efficiency	98.9%						
CEC	98.5%						
Max. consumption aux. services	7,600 W						
Stand-by or night consumption ⁽⁵⁾	185 W						
Average power consumption per day	2,500 W						
General Information							
Ambient temperature	-20 °C to +60 °C						
Relative humidity (non-condensing)	0-100% (Outdoor)						
Protection class	IP65 ⁽⁶⁾						
Corrosion protection	External corrosion protection						
Maximum altitude	4,500 m (for installations beyond 1,000 m, please contact Ingeteam's BESS sales department)						
Cooling system	Liquid cooling system and forced air cooling system with temperature control (400V 3 phase + neutral power supply, 50/60 Hz)						
Air flow range	0 - 18,000 m³/h						
Average air flow	12,000 m³/h						
Acoustic emission (100% / 50% load)	<57 dB(A) at 10m / <49.7 dB(A) at 10m						
Marking	CE						
EMC and security standards	IEC 62920, IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-4, IEC 61000-3-11, IEC 61000-3-12, IEC 62109-1, IEC 62109-2, EN 50178, FCC Part 15, AS3100						
Grid connection standards	IEC 62116, EN 50530, IEC 61683, EU 631/2016 (EN 50549-2, CEI 0-16, NTS Spain, VDE-AR-N 4120, VDE-AR-N 4110, , Arrêté du 9 juin 2020, Terna A68), G99, South African Grid Code, Mexican Grid code, Chilean Grid Code, Ecuadorian Grid Code, Peruvian Grid Code, IEC61727, ABNT NBR 16149, ABNT NBR 16150, IEEE 1547, IEEE1547.1, DEWA (Dubai), Abu Dhabi Grid Code, Jordan Grid Code, Egyptian Grid Code, Saudi Arabia Grid Code, RETIE Colombia, Australian Grid Code						

Notes: ⁽¹⁾ Minimum voltage DC (VDC, min) for V_{grid,max} = 1.1 p.u. and Power Factor=1. If V_{grid,max} is higher than this value, the minimum voltage should be corrected as VDC, min * V_{grid,max} / 1.1. For other DC voltage ranges, please contact Ingeteam's BESS sales department ⁽²⁾ Other AC voltages and powers available upon request ⁽³⁾ For P_{out}>25% of the rated power ⁽⁴⁾ For P_{out}>25% of the rated power and voltage in accordance with IEC 61000-3-4 ⁽⁵⁾ Consumption from Battery ⁽⁶⁾ Except for the LC filter and the air-water heat exchanger, that are IP54.



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